

## **What is claimed is:**

**[Claim 1]** A measuring device comprising:

- (a) a surface of arbitrary length and curvature upon which is placed a multitude of alternating reflective and non-reflective markings, and
- (b) a sensor capable of detecting said alternating reflective and non-reflective markings whereby displacement between said sensor and said surface is measured through slideable movement between said sensor and said surface of arbitrary length and curvature.

**[Claim 2]** A measuring device as defined in claim 1 wherein said alternating reflective and non-reflective markings are contained on an adhesive tape, which is subsequently applied to said surface.

**[Claim 3]** A measuring device as defined in claim 1 wherein said surface is inherently non-reflective and said reflective markings are applied to said non-reflective surface.

**[Claim 4]** A measuring device as defined in claim 1 wherein said surface is inherently reflective and said non-reflective markings are applied to said reflective surface.

**[Claim 5]** A measuring device as defined in claim 1 wherein said surface is inherently reflective, a non-reflective coating is applied to said reflective surface, and alternating reflective areas are subsequently revealed by selective removal of said non-reflective coating.

**[Claim 6]** A measuring device as defined in claim 1 wherein said surface is inherently non-reflective, a reflective coating is applied to said non-reflective surface, and alternating non-reflective areas are subsequently revealed by selective removal of said reflective coating.

**[Claim 7]** A measuring device as defined in claim 1 wherein 2 sets of said sensors and their corresponding alternating reflective and non-reflective markings are oriented at 90 degrees to one another on a single surface, permitting measurement in two perpendicular dimensions.

**[Claim 8]** A measuring device as defined in claim 1 wherein the output of said sensor consists of one electronic signal, thereby able to measure motion in one direction only.

**[Claim 9]** A measuring device as defined in claim 1 wherein the output of said sensor consists of two electronic signals, oriented 90 electrical degrees from each other, thereby able to measure motion in both directions.

**[Claim 10]** A measuring device as defined in claim 1 wherein the output of said sensor includes an electronic signal that indicates the presence of a reference mark.

**[Claim 11]** A measuring device as defined in claim 1 wherein the electronic signals of said sensor's output are analog representations of the amount of light detected by the sensor.

**[Claim 12]** A measuring device as defined in claim 1 wherein the electronic signals of said sensor's output are made to conform to RS-422 differential signaling standards.

**[Claim 13]** A measuring device as defined in claim 1 wherein the electronic signals of said sensor's output are made to be compatible with TTL inputs.

**[Claim 14]** A measuring device as defined in claim 1 wherein a multiple of said detectors are used in order to detect and recover from any flaws that may exist in said surface.